



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,939	07/10/2001	Terry G. Roberie	W9517-01	9291

7590

09/08/2004

Beverly J. Artale  
W. R. Grace & Co.-Conn.  
Patent Dept.  
7500 Grace Drive  
Columbia, MD 21044-4098

EXAMINER
----------

ARNOLD JR, JAMES

ART UNIT	PAPER NUMBER
----------	--------------

1764

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/901,939

Applicant(s)

ROBERIE ET AL.

Examiner

James Arnold, Jr.

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 19 October 2001.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Myers (USPN 4,728,416)

The Myers reference discloses a process for reducing the sulfur content of cracking products from a FCC process in which a heavy hydrocarbon feed comprising organosulfur compounds is catalytically cracked to lighter products by contact in a cyclic catalyst recirculation cracking process with a circulating fluidizable catalytic cracking equilibrium catalyst inventory, the process comprising: (i) providing a substantially liquid heavy hydrocarbon feed stream comprising at least one organosulfur compound as an impurity; (ii) introducing the hydrocarbon feed stream into a FCC reactor unit operating under catalytic cracking conditions and comprising a circulating inventory of an equilibrium catalyst composition; (iii) removing a portion of the equilibrium catalyst inventory from the FCC reactor unit while replacing all the equilibrium catalyst inventory removed from the unit with fresh catalyst to create a steady state environment within the FCC reactor unit; (iv) contacting the hydrocarbon feed stream with at least one vanadium compound in an amount sufficient to increase the concentration of vanadium in or on the equilibrium catalyst inventory by about 1500 to 6000 parts per million expressed as equivalent nickel; and contacting the equilibrium catalyst inventory in the FCC reactor unit with

Art Unit: 1764

the vanadium containing hydrocarbon feed stream under a steady state environment to produce a cracking zone effluent comprising cracked products, including gasoline, having a reduced sulfur content. See Column 2, lines 40-47; Column 3, lines 12-68; Column 4, lines 67-68; Column 5, lines 35-45; Column 10, lines 30-60; Column 39, lines 32-50. The reference discloses a process comprising (i) discharging and separating the effluent mixture into a cracked product rich vapor phase and a solid rich phase comprising spent catalyst; and removing the vapor phase as a product and fractionating the vapor to form liquid cracking products, including gasoline, having a reduced sulfur content. See Figure 1 and Figure 2; Column 1, lines 20-24, Column 21, lines 59-69; Column 22, lines 1-50; and Column 35, lines 25-65. The reference discloses the use of a heavy metal sulfate compound (vanadium sulfate). See Column 11, lines 3-15. The reference discloses the use of faujasite, a large pore size zeolite. See Column 15, line 13. The reference discloses vanadium and nickel as impurities. See Table 1. The reference discloses a process comprising (i) stripping the solids rich spent catalyst phase to remove occluded hydrocarbons from the catalyst, (ii) transporting stripped catalyst from the stripper to a catalyst regenerator; (iii) regenerating stripped catalyst by contact with oxygen containing gas to produce regenerated catalyst; and (iv) recycling the regenerated catalyst to the cracking unit to contact further quantities of heavy hydrocarbon feed. See Column 4, lines 67-68 and Column 5, lines 1-45.

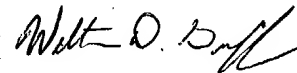
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Arnold, Jr. whose telephone number is 571-272-1443. The examiner can normally be reached on Monday-Thursday 8:30 AM-6:00 PM; Fridays from 8:30 AM-5:00 PM with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ja  
September 3, 2004

  
**Walter D. Griffin**  
Primary Examiner